CLOSING DEVICE FOR DOORS, BONNETS, GATES OR THE LIKE, ESPECIALLY OF VEHICLES, SUCH AS MOTOR VEHICLES

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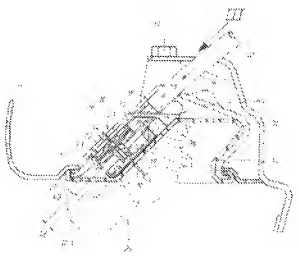
Abstract of **DE10202371**

The invention relates to a closing device consisting of a grip housing (10) containing a pivotably mounted grip flap (12). Said grip flap (12) is loaded by means of a restoring force (38) in the direction of its neutral position (12.1), against which force the manual actuation of the grip flap (12) must be carried out. Furthermore, an electrical switch (20) is associated with the grip housing (10), said switch comprising a spring-loaded (28) contact actuator (24). In order to provide a compact, cost-effective closing device, the restoring force (38) of the grip flap (12) can be directly generated by the spring-loading (28) of the contact actuator (24) of the electrical switch (20). In this way, separate springs are not required for the grip flap (12).



Result Page

The invention is directed toward a shutter in the generic term of the claim 1 indicated type. Such a shutter is used particularly at the rear door of a vehicle. The grasp housing is fastened in an onset of the external lining of the rear door. A Gummilhal appropriately covers not only the grasp flap but also the grasp housing, by which can become manual actuated through the grasp flap.

With the well-known shutter of this type (WHERE 05/01693, Fig. 15 to 18), in the distance by the axis of rotation of the grasp flap a arragender bolt is intended, which stands out from an onset in the side wall of the grasp housing. On the outer surface of the housing side panel sits the electrical switches, whose contact actuators the outstanding bolt affects with operation of the grasp flap. The cable leading to the electrical switch possesses terminals, which serve as strain relief for the cable attached at the switch on the outside of the grasp housing. As return force for the grasp flap serves a ball spring-loaded by a compression spring, which is integrated in a lateral recess of the grasp flap. A plane of inclination is assigned to the spring-loaded ball in the grasp housing, whose inclination points toward the home position of the grasp flap. If the grasp flap becomes manual actuated, then the ball at the plane of inclination unrolls and squeezed the compression spring together. From a force component of the compression spring results toward the starting position of the grasp flap working return force. The ball interacted with the operation of the grasp flap on the plane of inclination. This well-known shutter is place complex and covers numerous parts. These numerous parts increase the assembly expenditure and lead to relatively high manufacturing costs.

The invention is the basis the object to develop an inexpensive shutter in the generic term of the claim 1 type specified which exhibits few parts and is space saving trained. This is reached according to invention by the measures specified in the claim 1, to which the following special significance comes

The spring load of the switch can take over the return force at the same time generally speaking shutter, which is anxious to hold the grasp flap in their rest position. Thus outside of the grasp housing lying actuating means or switch are avoided. It recommends to arrange itself the switch underneath the grasp flap. The switch is integrated in the grasp housing, which is appropriately dish-shaped trained. This bowl form is covered thereby by the grasp flap.

Further measures and advantages of the invention result from the Unteransprüchen, the following description and the designs. In the design the invention in several embodiments is represented. Es zeigen:

Fig. 1 a cross section by the shutter according to invention before its installation in the rear flap of a vehicle, in rest position of the grasp flap,

Fig. 2 the same shutter as in Fig. 1, wenn die Griffklappe sich in ihrer Arbeitslage befindet,

Fig. 3 a fragment of the grasp housing one to Fig. 1 and 2 of similar shutter, from the rear side of housing in viewing direction of the arrow III of Fig. 1,

Fig. 4, in perspective illustration, the plan view on the front of the casing in Fig. 3 shutter shown, after the installation of an electrical switch as well as an assembly bowl and

Fig. 5, in one the Fig. 3 appropriate back opinion of this shutter, conditions, which result after the installation of the electrical switch and the assembly bowl in the grasp housing.

In Fig. 3 grasp housing 10 with one with 11 fittable stored grasp flap 12 covers 1 and 2 shutter shown there. The grasp housing 10 consists of a bowl open to the lower surface 13 of the grasp flap 12. Am Schalenboden 14 ist, zur Montagehilfe des Schalters 20, eine Montageschale 30 befestigt, die ebenfalls zur Griffklappen-Unterseite 13 hin offen ist. Diese Verhältnisse sind insbesondere aus Fig. to see 3 to 5.

The grasp housing 10 possesses an opening 15, which serves 40 for accomplishing an electric cable. Its two wires 41, 42 when assembly assembling 30 up to the electrical switch continues, where they are connected with two stationary contacts 21, 22. Im Inneren der Montageschale 30 ist eine Zugentlastung 31, 32 für das elektrische Kabel 40 vorgesehen. This consists here of two 33 bolts 31, 32 sitting in the bowl inside, around which the two cable cores 41, 42 are labyrinth-like led, i.e. in form of a S. After bringing in the switch 20 and the cable the bowl inside 33 by the assembly bowl 30 is filled out with a casting compound not shown more near. This takes the switch housing 23 and the two cable cores of 41, 42 at least bereichsweise and provides for an attachment of the switch housing 23 when assembly assembling 30. This thing produces a pre-mountable assembly 44, which from the assembly bowl 30, which therein switches 20 fastened and in the strain relief 31, 32 sitting cables 40 exist.

This assembly 44 is only later inserted by the opening 15 in the grasp housing 10 already mentioned. The opening is in addition, like Fig. 3 shows, suitably formed. The break-through profile has stage form, over with by an assembly arrow the 34 in Fig. 1 illustrated module movement the contact actuator 24 outstanding with the assembly unimpaired the inside the grasp housing 10 bring in to let by snapping elements not shown more near a defined installation position of the assembly bowl 30 secured in the grasp housing 10 becomes. The assembly bowl 30 possesses thereby finalateral lapping 35 with an outlining profile complementary for the staggering of the opening 15, which takes the opening at 15 to a large extent in the installation position in the grasp housing 10 sits first only with 11 swivelling-stored grasp flap the 12.

The Fig. 1 shows the installation position of the grasp housing 10 equipped with the above-mentioned assembly 44 in a cutout 16 of an external lining 17 of the rear door of a vehicle. The bowl opening is covered by the grasp housing 10 by an elastomeric skin 36, which has a spatial profile and thereby with a central skin section against the outside 18 of the grasp flap 12 rests itself. The elastomeric skin forms a capsule for the installed assembly and for the grasp flap 12 together with the grasp housing 10. Boundary regions of the skin 36 embrace bent border edges of the grasp housing 10

and work as seal means, if the shutter is fixed over screwing means 39 at the external lining 17

Fig. the structure of detail of the electrical switch 20 and its special function shows 2. The switch housing 24 covers relatively rigid lower part 25 and an elastomeric upper section 26, on which the contact actuator 24 is angeformt in form of a tappet. Inside the switch housing 25, between which both parts 25, 26 a curved is diaphragm feather/spring 27 arranged, which holds the contact actuator 24 in the home position with its curvature into a defined home position, which in Fig. 1 is illustrated with an auxiliary line characterized with 24.1. Die Membranfeder 27 entlastet am Kontaktbetätiger 24 eine durch den Profilgriff 28 in Fig. 1 veranlaßte Federbelastung. Daher berührt das Stirnende des stößelförmigen Kontaktbetätigers 24 einen an der Unterseite 13 der Griffklappe 12 vorgesehenen Vorsprung 19, wo es zu einer formschlüssigen Eingriffslage kommen kann.

The diaphragm feather/spring 27 consists of electrical conductive material. In the home position 24,1 of Fig. 1 is distant the diaphragm feather/spring 27 from the two stationary contacts 21, 22. In dieser ersten, normalerweise vorliegenden Kontaktstellung sind die beiden elektrischen Kontakte 21, 22 nicht miteinander verbunden; a Pfeil position of the switch 20 is present. Die Federbelastung 28 des Kontaktbetätigers 24 dient im vorliegenden Fall dazu, die Griffklappen in einer aus Fig. 1 ersichtlichen Ruhelage im Griffgehäuse 10 zu halten, welche in Fig. 1 with an auxiliary line 12,1 is illustrated. The spring load 28 of the diaphragm feather/spring 27 provides for a resisting effect of the grasp flap 12 in the direction of this rest position 12,1. This return force is by a force arrow 38 in Fig. 1 illustrates.

In the initial state first only the grasp housing 10 provided with the grasp flap stored therein 12 is, whereby bedarfsweise can be attached the elastomeric skin 36. In this thing the grasp flap is first not 12 under the action of a return force spring-loaded. Diese Rückstellkraft entsteht erst nach der Montage der Bauelemente 44. This is put toward the mentioned assembly arrow 34 into the above-mentioned thing and is not fixed into it by rest means shown more near. Then the contact actuator 24 at the projection 19 of the grasp flap 12 comes to the plant and provides for the mentioned return force 38.

As previously mentioned, is normally the grasp flap became 12 in their in Fig. 1 rest position shown 12,1. This remains so long, when a human hand does not attack 29 yet at the elastomeric skin 36.

This changes only if the hand 29, like Fig. , exercises a pressure to the grasp flap 12 and this shows 2 therefore in the sense of the swiveling arrow 37 around the axis of rotation 11 swivelled. Then the stößelförmige contact actuator 24 is pressed and comes into its into Fig. 2 by the auxiliary line 24,2 characterized operating position. In this operating position 24,2 interiorlaterally the diaphragm feather/spring 27 supporting at the contact actuator 24 is gratehend, to it to an electric junction between the two stationary contact parts 21, 22 comes themselves. Dann liegt eine Einschaltstellung des Schalters 20 vor, wodurch die gewünschten Funktionen an angehängten Verschluss ablaufen können. Damit erweist sich die durch die Hilfslinie 12,2 in Fig. attitude of the grasp flap illustrated 2 as effective working position of the grasp flap 12. The above-mentioned operation 37 toward the working position 12,2 must take place against the return force 38. Lässt die menschliche Hand 29 die Griffklappe 12 los, so wird diese aufgrund der schalterseitigen Federbelastung 28 wieder in ihre Ruhelage 12,1 von Fig. 1 moves backward. During the above-mentioned grasp manipulation 37 the diaphragm feather/spring 27 is still more strained and produced by it one opposite the Fig. 1 still larger spring action 28

Required it would be to be arranged also possible the switch on the outside of the grasp housing 10 and the tappet-like contact actuator 24 by an opening the inside the casing to be introduced. Then a similar support comes as into Fig. 1 with the grasp flap 12.

Im vorliegenden Ausführungsbeispiel ist die Montageschale 30 mit einer Erhöhung 43 versehen, die bei der Betätigung als Anschlag für die Griffklappe 12 dient. Die Ausbildung dieser Erhöhung 43 ist insbesondere aus Fig. to see 4. Durch die Anschlagwirkung der Erhöhung 43 wird ein Überhub verhindert und eine Beschädigung der Bauteile bei übermässiger Betätigungskraft vermieden. The increase 43 can be as required also component of the casing 10.

If the return force 38 of the grasp flap is 10 take 12 higher values, this can be carried out simply by the fact that one arranges several superimposed diaphragm feathers/springs 27 the inside the switch 20. Thus the return force 38 can be doubled or trebled easily. Anstelle einer Membranfeder 27 könnte die Federbelastung 28 des Kontaktbetätigers 24 auch durch andere an sich bekannte Federmittel erfolgen, z. B. Compression springs.

Reference symbol list
10 grasp housings
11 axis of rotation
12 Griffklappe
12,1 rest position of 12
12,2 working position of 12
13 lower surface of 12
14 bowl sat of 10
15 opening in 10
16 cutout in 12
17 Aussenverkleidung
18 outside of 12
19 projection at 13 for 24
20 electrical switch
21 first contact of 25
22 second contact of 26
23 switch housings of 20
24 contact actuators of 26
24,1 home position of 24
24,2 operating position of 24
25 Unterteil von 23
26 elastomeric upper section of 23
27 diaphragm feather/spring of 20
28 force arrow of the spring load of 24
29 human hand
30 assembly aids, assembly bowl
31 strain relief of 40, first bolt
32 strain relief of 40, second bolt
35 bowl inside of 30
34 assembly arrow of 44 in 10
35 final rags of 30
36 elastomeric skin with 35

37 lagging arrow of 12
38 arrow of the return force of 12
39 screwing means for 10 (Fig. 1)
40 electric cable
41 conductors of 40, first wire of 40
42 conductors of 40, second wire of 40
43 increase, step at 30
44 assembly